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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,802	04/04/2002	Toru Kawase	OGOH:110	3089

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Parkhurst & Wendel
1421 Prince Street Suite 210
Alexandria, VA 22314-2805

EXAMINER	
NGUYEN, KEVIN M	

ART UNIT	PAPER NUMBER
2674	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/089,802	KAWASE ET AL.	
	Examiner	Art Unit	
	Kevin M. Nguyen	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is made in response to applicant's amendment filed on 11/03/2004. Claims 1-70 are amended, and claims 1-70 are currently pending in the application. An action follows below:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-8, 13-22, 34-41, 43-55, 68-70 are rejected under 35 U.S.C. 102(e) as being anticipated by Fan (newly cited, US 6,097356).

2. As to claims 1, 3, 5, 7, 20, 34, 36, 38, 40 and 53, Fan teaches a display panel associated with a method of calibrating, the display panel comprising

In FIG. 7a or 7b, the microprocessor 60 or the driver electronics 90 first compare desired intensity I (i, j)--which is the desired emission current in this case--with the set of intensity levels (I1, I2, I3..., and IK) which have pre-calculated driving voltage stored in calibration memory 70, the microprocessor 60 or the driver electronics 90 find the two numbers (among I1, I2, I3..., and IK) which are most close to the desired intensity I(i, j); the microprocessor 60 or the driver electronics 90 will then fetch the driving voltages corresponding to these two numbers from calibration memory 70 and use liner

approximation to calculate the driving voltage V(i, j) which can achieve the desired intensity I(i, j) (col. 11, lines 19-31).

If there are cathode degrading effect, the above described loop-up tables need to calculated again (at least two times) at a later time to correct the cathode degrading effect (col. 8, lines 29-32).

Different cathode in the cathodes matrix may have different slope k in the L verses tL curve (fig. 8c, col. 12, lines 24-26).

3. As to claims 2, 35, Fan teaches using least square fit (match) in combination with device models to calculate the correct driving voltage V(i, j) which can achieve the desired intensity I_{target} (i, j) (col. 7, lines 62-65).

4. As to claims 16, 49, Fan teaches In FIG. 7a or 7b, the microprocessor 60 or the driver electronics 90 first compare desired intensity I(i, j)--which is the desired emission current in this case--with the set of intensity levels (I1, I2, I3 . . . , and IK) which have pre-calculated driving voltage stored in calibration memory 70, the microprocessor 60 or the driver electronics 90 find the two numbers (among I1, I2, I3 . . . , and IK) which are most close to the desired intensity I(i, j); the microprocessor 60 or the driver electronics 90 will then fetch the driving voltages corresponding to these two numbers from calibration memory 70 and use liner approximation to calculate the driving voltage V(i, j) which can achieve the desired intensity I(i, j) (col. 11, lines 19-31).

5. As to claims 4, 37, Fan teaches the microprocessor 60 or the driver electronics 90 find the two numbers (among I1, I2, I3..., and IK) which are most close to the desired intensity I(i, j) (col. 11, lines 24-26).

6. As to claims 13-15, 46-48, Fan teaches the microprocessor 60 or the driver electronics 90 first compare desired intensity I(i, j)--which is the desired emission current in this case--with the set of intensity levels (I1, I2, I3..., and IK) which have pre-calculated driving voltage stored in calibration memory 70, the microprocessor 60 or the driver electronics 90 find the two numbers (among I1, I2, I3..., and IK) which are most close to the desired intensity I(i, j) (col. 11, lines 19-26).

7. As to claims 17, 50, Fan teaches the captured luminance information (a current detector 50, fig. 3) is driving current (fig. 3).

8. As to claims 18, 51, Fan teaches "For example, for cathode (i,j) at i'th row and j'th column, to calculate a desired emission current Itarget (i, j), one first compare the desired emission current Itarget (i, j) with all the measured emission current Ie1 (i, j) Ie2 (i, j), Ie3 (i, j) and IeH (i, j)" (col. 7, lines 35-40). Thus, starting point is defined by cathode (i,j) at i'th row and j'th column where i =1 and j=1.

9. As to claims 19, 52, Fan teaches the display panel, an anode electrode 1 (fig. 3), a surface 1 (fig. 3), a phosphor 5 (fig. 1a), an anode current 50 (fig. 3).

10. As to claims 21, 22, 54, 55, Fan teaches the set of intensity levels (I1, I2, I3 . . . , and IK) which have pre-calculated driving voltage stored in calibration memory 70 (col. 11, lines 21-23).

11. As to claims 6, 8, 39, Fan teaches If there are cathode degrading effect, the above described loop-up tables need to calculated again (at least two times) at a later time to correct the cathode degrading effect (col. 8, lines 29-32).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 9, 10, 11, 12, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan in view of Ando et al (newly cited, US 4,672,275).

As to claims 9, 10, 11, 42, Fan teaches all of the claimed limitation, except for correcting luminance setting values are carried out during vertical blanking periods.

However, Ando et al teaches the correction data is stored during the vertical blanking period (col. 4, lines 39-40).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Fan's calibrating including teaches the correction data is stored during the vertical blanking period, in view of the teaching in Ando et al's reference, because this would provide high accuracy in a simple and quick adjusting operations, and provide for easy and arbitrary adjustments by an end user as taught by Ando et al (col. 2, lines 16-18).

14. As to claim 12, Ando et al teaches the correction data is stored during the vertical blanking period (col. 4, lines 39-40). Thus, adjacent pixels are not driven.

15. Claims 24-33, 56-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan in view of Howard et al (previously cited, US 6,023,259).

As to claims 24, 27-29, 31-33, 56, 58-61, 63-66, Fan teaches all of the claimed limitations, except for a gray scale realization method for the display panel is pulse width control and amplitude modulation.

Howard et al teach a display device comprising gray levels can be generated by either pulse width modulation and/or amplitude modulation (col. 8, lines 1-34).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Fan's driver circuit including gray levels can be generated both pulse width modulation and amplitude modulation, in view of the teaching in Howard's reference because this would produce a good quality gray scale image, while fabricating a driver at low cost as taught by Howard (col. 5, lines 1-15).

16. As to claims 25, 57, Howard et al teach gray levels can be generated both pulse width modulation and amplitude modulation (col. 8, lines 1-34). Thus, it is obvious to change amplitude increasable.

17. As to claim 26, 30, 62, Howard et al teach gray levels can be generated by amplitude modulation and pulse width modulation (col. 1, lines 1-2). Thus, it is obvious to carry out simultaneously amplitude control and pulse width control.

18. Claims 23 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan in view of Xie et al (previously cited, US 6,025,819).

As to claim 23 and 67, Fan teaches all of the claimed limitations, except for gamma correction.

Xie et al teach a display panel comprising gamma corrections (fig. 5, col. 4, line 57).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Fan's driver circuit including gamma corrections, in view of the teaching in the Xie's reference because this would provide an improved method for achieving a gray scale in a field emission display device, which provides a high number of gray scale levels as taught by Xie (col. 2, lines 9-11).

Response to Arguments

19. Applicant's arguments filed 11/03/2004 have been fully considered but they are not persuasive. Applicant argues features in the independent claims 1, 3, 5, 7, 20, 34, 36, 38, 40 and 53 that are newly recited. Thus, new grounds of rejection have been used. See above rejections.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cappels, Sr. et al (US 5,670,985) teach the calibration comprising "If satisfaction has not been indicated, the method continues in step 142. In step 142, the processor 24 divides the step in half and increases the B display record. The processor 24 then determines if the brightness step is less than the limitations of the output device 11. If the step is not less than the limitations of the output device 11, the method returns to step 126 to adjust the brightness again" (see fig. 7B, col. 12, lines 39-45).

Wagner (US 5,933,130) teaches the calibration comprising "said brightness control software including instructions that direct the brightness of substantially the entire display to be varied during a plurality of sequential time intervals in accordance

with a predetermined pattern that gradually varies the brightness over an extended time interval during at least a portion of each of the plurality of the sequential time intervals" (see col. 14, lines 31-37).

Dallas et al (US 6,633,301) teach the calibration "Based on the comparison, calibration controller 216 causes current source 212 to vary the current supplied to illumination device 208 until the intensity of light provided by illumination device 208 matches the reference intensity" (see col. 6, lines 21-25).

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Nguyen whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick N. Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin M. Nguyen
Patent Examiner
Art Unit 2674

KMN
April 15, 2005

XIAO WU
PRIMARY EXAMINER